

SUBSTITUTE SPECIFICATION

PATENT

INSTITUT FRANCAIS DU PETROLE

METHOD OF GENERATING A HYBRID GRID ALLOWING MODELLING OF A
HETEROGENEOUS FORMATION CROSSED BY ONE OR MORE WELLS

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ABSTRACT

A method of generating a hybrid grid allowing modelling of a heterogeneous formation crossed by one or more pipes such as, for example, an underground formation where one or more wells have been drilled, in order to form a representative model, for example of fluid flows in the formation in accordance with a defined numerical pattern is disclosed. The method comprises associating a first structured grid for gridding of the heterogeneous medium regarding discontinuities thereof with a second structured, radial type grid for gridding of a zone around each pipe or well, which allows better constraints linked with flows in the zone, and transition of non-structured grids that are interposed between the first grid and each second well grid. Various grids are combined, each with its own formation, representation and exploration methods, structured grids which are advantageous in facilitating control and comprehension of the reservoir images formed and more flexible non-structured grids for gridding of complex zones. An application is simulation of hydrocarbon reservoirs.